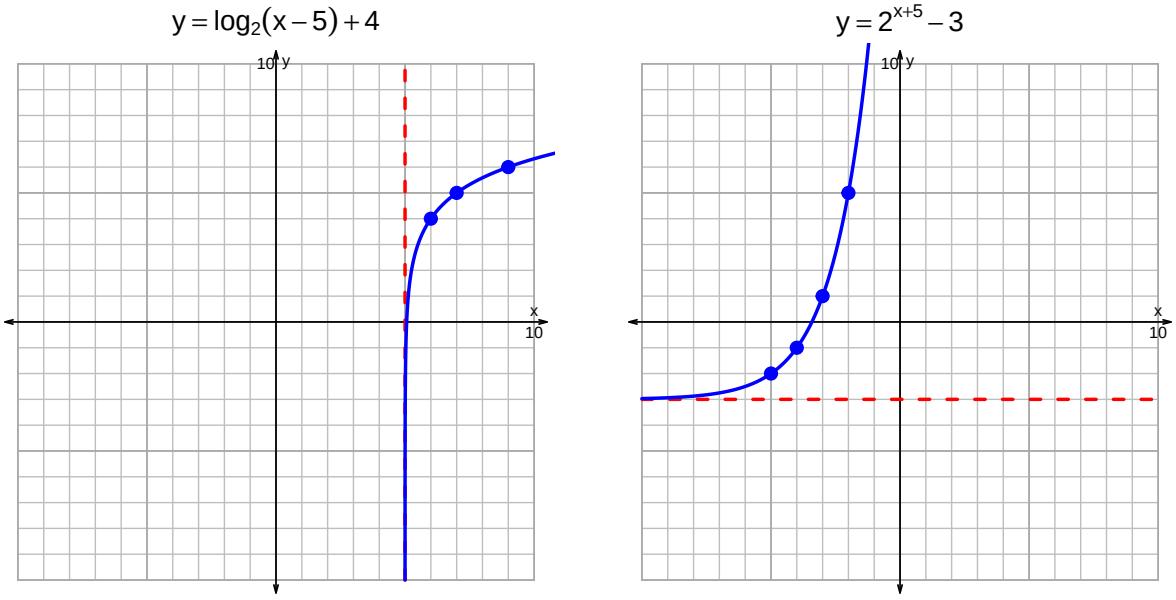
Name: Date:

s18quiz: EXP LOG (Solution v140)

1. Graph $y = \log_2(x-5)+4$ and $y = 2^{x+5}-3$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-17 = \left(\frac{-4}{7}\right) \cdot 2^{5t/3}$$

Divide both sides by $\frac{-4}{7}$.

$$\frac{17 \cdot 7}{4} = 2^{5t/3}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{17 \cdot 7}{4}\right) = \frac{5t}{3}$$

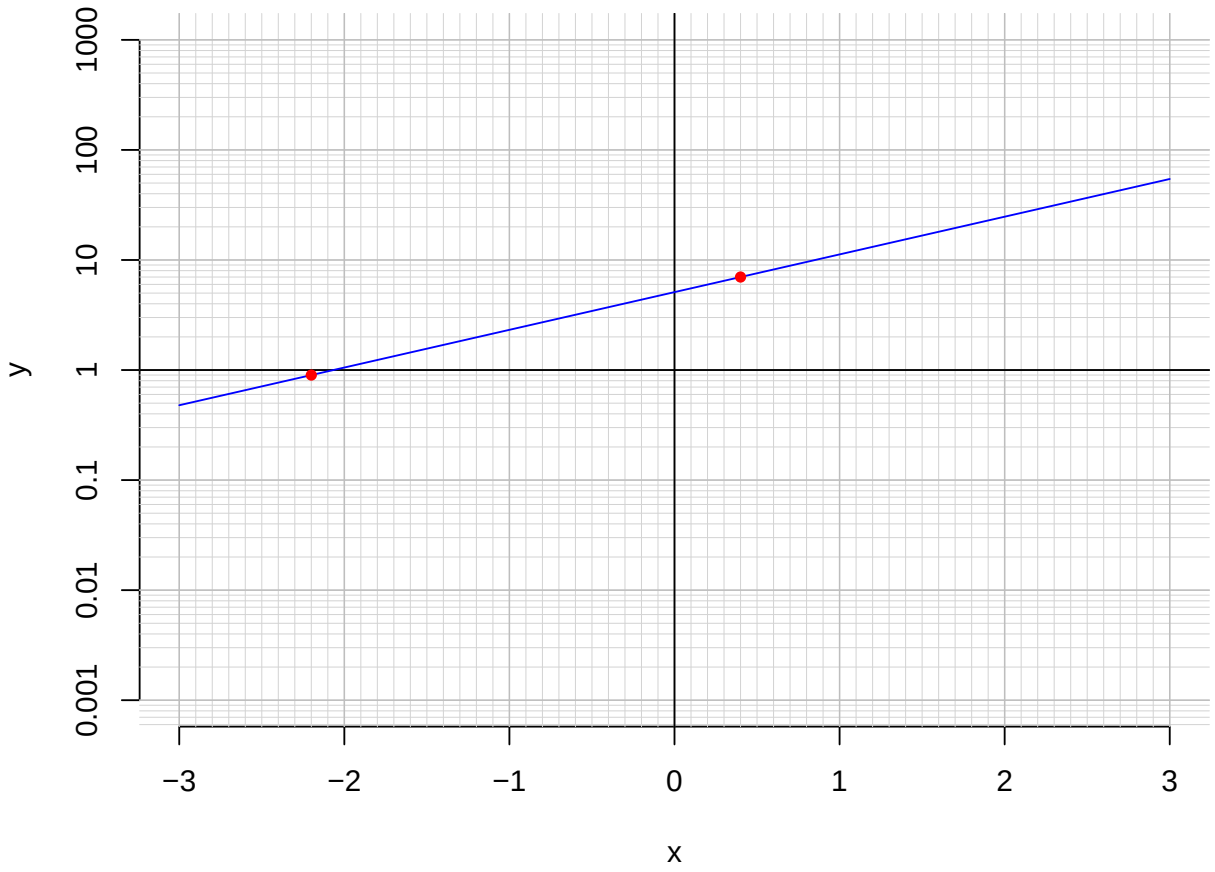
Divide both sides by $\frac{5}{3}$.

$$\frac{3}{5} \cdot \log_2\left(\frac{17 \cdot 7}{4}\right) = t$$

Switch sides.

$$t = \frac{3}{5} \cdot \log_2\left(\frac{17 \cdot 7}{4}\right)$$

3. An exponential function $f(x) = 5.11 \cdot e^{0.789x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-2.2)$.

$$f(-2.2) = 0.9$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{1}{0.789} \cdot \ln\left(\frac{x}{5.11}\right)$$

c. Using the plot above, evaluate $f^{-1}(7)$.

$$f^{-1}(7) = 0.4$$